No. 1.1.0

GENERAL REQUIREMENTS AND OBJECTIVES FOR ACCELERATOR TEST FACILITY OPERATIONS

December 19, 1997

1. Introduction

The Accelerator Test Facility is designed to meet the needs of accelerator and beam physicists at Brookhaven National Laboratory and other national laboratories or universities engaged in accelerator research.

In this sense it is a unique concept: a users' facility for accelerator physicists and their graduate students. As an electron linac-laser complex the ATF provides a high brightness electron beam and several high power, short pulse laser beams synchronized with the electron beam.

The ATF is operated by the National Synchrotron Light Source, under the direction of BNL's Center for Accelerator Physics (CAP). Management, which includes Safety and Environmental Protection is provided through the NSLS Department, and user experiments are reviewed and approved by the Steering Committee of CAP.

The objectives of the ATF are to provide low emittance, high peak current electron beams synchronized with high peak power laser beams and to maintain a research program which will bring about even higher brightness beams and develop improved lasers, diagnostics, novel accelerator techniques and radiation sources.

2. Mode of Operation

Because of its unique nature as an accelerator physics facility the operation of the ATF differs from most other accelerator facilities. The users of the facility are generally skilled accelerator designers or graduate students specializing in the accelerator physics field. As such they understand the complexities of beam transport and modeling and the operating intricacies of the accelerator itself.

Also the designated machine or accelerator operators are technicians thoroughly familiar with the design and limitations of the equipment which makes up the accelerator facility since they were intimately involved in the design and construction if it.

The Operations Coordinator for the ATF who has overall responsibility for the machine studies program which determines the operating parameters for the accelerator. This person also acts as liaison with the Lead Experimenters on machine related issues and has responsibility for on-the-job training of all operating personnel designated in the following Sections. The Operations Coordinator is responsible for maintaining an accelerator physics log book and for maintaining current data files for operational use.

As a consequence of the above, the operation of the ATF has been separated into four main areas (which may overlap) as follows:

2.1 Accelerator Operator

The Accelerator Operator, who is one of the engineers or technicians responsible for the design and/or construction of the ATF, has overall responsibility for machine operation. He/she is responsible for carrying out all operations procedures and check lists (though trained laser operators may also conduct laser procedures). The Accelerator Operator has singular responsibility for control of the master key at all times and maintains operations, key and other operation log books.

2.2 Laser Operator

The Laser Operator is responsible for all laser local operations and for demonstrating proper laser conditions at the electron gun photo-cathode and at the experiment in progress. This person may carry out search and secure procedures in the gun hutch, laser rooms or experimental area. The persons assigned this responsibility are skilled in the design and operation of high power laser systems.

2.3 Lead Experimenter

The Lead Experiment who is a knowledgeable accelerator or beam physicist is responsible for the safe conduct of an ATF experiment. It is this persons responsibility to ensure that only trained authorized users are involved in work in the Experimental Area.

2.4 Experimental Operator

The Experimental Operator is generally a graduate student familiar with the experiment currently under study and trained in the safe operation of the experiment and in Experimental Area Radiation and Laser Security Checks.

This person may adjust beam energy, intensity, and profile using the ATF computer system either in the Control Room or in a remote location such as the FEL Room. He/she may work on experimental equipment on which he/she is trained and knowledgeable.

An Experimental Operator may not work on accelerator equipment such as modulator, klystrons, magnet power supplies, etc. Only persons trained on that equipment may work on it. However, Experimental Operators may turn off such equipment at the end of an Experimental shift or an emergency and are trained for this eventuality.

3. Other ATF Users

Any collaborator, student or visitor coming to the ATF becomes the responsibility of their

local ATF contact (generally a Lead Experimenter or senior member of the ATF staff). Short term guests must be escorted by a qualified ATF member until they receive safety instructions as described in this handbook. New users must register at the NSLS Users' Administration Office. They will receive a visitors personal dosimeter after viewing the NSLS general safety orientation video. To be qualified as experimental operators at the ATF users must receive ATF Safety Hazard Training and ATF Operators Training as detailed in Section 4 of this ATF Handbook.